



ЮЖНЫЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ
Региональный математический центр
SOUTHERN FEDERAL UNIVERSITY
Regional Mathematical Center
<https://rmc.sfedu.ru/>, Rostov-on-Don, Russia

International scientific online seminar on Analysis, Differential Equations and Mathematical Physics

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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3 March 2022, 6 pm (UTC+3)

Nonlinear composition operators in generalized Morrey spaces

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Let Ω be an open subset of \mathbb{R}^n . Let f be a Borel measurable function from \mathbb{R} to \mathbb{R} . We prove necessary and sufficient conditions on f in order that the composite function $T_g[g] = f \circ g$ belongs to a generalized Morrey space $\mathcal{M}_p^w(\Omega)$ whenever g belongs to $\mathcal{M}_p^w(\Omega)$. Then we prove necessary conditions and sufficient conditions on f in order that the composition operator $T_g[\cdot]$ be continuous, uniformly continuous, Hölder continuous and Lipschitz continuous in $\mathcal{M}_p^w(\Omega)$. We also consider its “vanishing” generalized Morrey subspace $\mathcal{M}_p^{w,0}(\Omega)$ and prove the related results for the composition operator as operator acting from $\mathcal{M}_p^{w,0}(\Omega)$ to $\mathcal{M}_p^w(\Omega)$ and also between the spaces $\mathcal{M}_p^{w,0}(\Omega)$. For the uniform, Hölder and Lipschitz continuity we have also conditions that are both necessary and sufficient. We also have both necessary and sufficient conditions for the continuity under certain additional natural assumptions. We also consider the most commonly used Morrey classes that are related to power-type weights in the context of a discussion of some of the conditions that we impose on the weights.

The talk is based on joint work with Prof. Alexey Karapetyants.

*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform.

Please send questions to tatandreeva@sfedu.ru (Tatiana Andreeva, scientific secretary).

The seminar is organized by the Regional Mathematical Center of the Southern Federal University in collaboration with Institute of Mathematics, Mechanics and Computer Sciences of the Southern Federal University and the special Interest ISAAC-OTHA group in Operator Theory and Harmonic Analysis.

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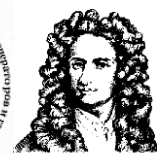
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